

Fig. 1D is a cross-sectional view of Fig. 1C, where a testing device 190 is electrically connected to trace conductor 160 at probe points 171 and 180. Testing device 190 may be a multi-meter for measuring the electrical continuity of trace conductor 160. One probe wire coming from device 190 is attached to solder ball 150 by, for example, solder joint 193. The other probe wire coming from device 190 has a probe needle 198 attached at its end and is typically manually placed into electrical contact with upper terminus 171. A magnifying lens of 2X or 5X may be employed to help locate and contact upper terminus 171 with probe needle 198. Unfortunately, during the lapping process, solder joint 193 may be jeopardized. Instead of connecting the probe needle by solder, it is desirable make frictional contact after the lapping process. Contact is contingent upon bring the opposing terminals in contact with the rather fine-line terminal ends of the trace conductor using a moveable substrate holder and moveable pin retainer to make contact as described in herein below.

Please replace pg. 11, line 24 - pg. 12, line 14, with the amended paragraph below. A "marked up" version of this paragraph is included in **Attachment A**.

Fig. 3A is a bottom view of semiconductor device package substrate probe fixture 502. Package

holding table 540 has rectangular opening for exposing the bottom solder balls 610 of package substrate 555. Moveable table 540 is shown on sliding rods 520 and attached to lead screw 512. Probe pin 670 extends upward from a moveable pin retainer 660. Retainer assembly 660 can be moved in a vertical direction, perpendicular to the direction at which table 540 moves by adjusting lead screw 510 that is attached to assembly 660, which slides assembly 660 on slide rods 625. Thus probe pin 670 can be aligned in the horizontal and vertical (i.e., along both the x- and y-axis) with any solder ball 610 by adjusting lead screw 512 and/or lead screw 510. Probe pin 670 can be adjusted in the vertical axis to make strong mechanical and electrical contact with a solder ball 610, by vertical height adjusting thumbscrew 665. Probe pin 670 is preferably a pogo pin with an internal spring at the base, which helps provide a firm contact on solder ball 610, while preventing a destructive pressure from being applied to

the solder ball 610. Furthermore, probe pin 670 is electrically coupled to electrical outlet socket 675 by electrical wire 672. By rotating thumb screw 512, pin 670 moves in an x-axis; by rotating thumb screw 510, pin 670 moves in a y-axis perpendicular to the x-axis, and by rotating thumb screw 665, pin 670 moves in a z-axis perpendicular to the x-axis and y-axis. Importantly, the distal end of pin 670 can be

moved in fine-line increments in three axes relative to a solder ball on the underneath side of a substrate. Pin 670 frictionally engages with the solder ball, without employing a solder connection and the problems



associated therewith.